EXHIBIT 1

Soap Technology For The 1990's

Edited By
Luis Spitz

American Oil Chemists' Society
Champaign, Illinois

AOCS Mission Statement

To be a forum for the exchange of ideas, information and experience among those with a professional interest in the science and technology of fats, oils and related substances in ways that promote personal excellence and provide for a high standard of quality.

Library of Congress Cataloging-in-Publication Data

Soap technology of the 90's.
Includes bibliographical references.
1. Soap. I. Spitz, Luis. II. Title: Soap technology of the nineties.
TP991.S687 1990 668'.12 90-553
ISBN 0-935315-29-2 CIP

Printed in the United States of America.

$$30\%\ NaOH_{ADDED} = \frac{2.16}{208} \times \frac{40}{30} \times 100 = 1.38\ lb$$

To summarize in molar equivalents, the formulas containing free fatty acids will have the following weight ratios:

Coconut Fatty $Acid_{WT}$ < Stearic $Acid_{WT}$.

To illustrate, 5% coconut fatty acid, MW 208 (as FFA) = 6.6% stearic acid, MW 274 (as FFA). In other terms, it will take a greater quantity of stearic acid than coconut fatty acid to neutralize a given quantity of alkali.

Bar Soap Properties

The physico-chemical properties of soap, such as physical constants, X-ray structure, and solubility data, are described in depth in well known monographs (8).

In the present section, the following product formula related attributes shall be discussed:

- Bar Lathering
- Bar Soap Lather Panel Test
- Bar Cracking
- Bar Mushing & Wear Rate
- Bar Rinsability
- Bar Efflorescence
- Bathtub Deposits
- Bar Graininess & Bar Smoothness
- Soap Alkaline Reaction
- Fatty Acid Migration
- Cleansing

The evaluation of the above properties is usually conducted by a combination of laboratory tests and consumer panels. An excellent book on the statistical treatment of consumer data has recently been published (9).

Bar Lathering

The lathering is one of the most important attributes of a bar of soap perceived by the consumer. The lathering, in conjunction with the fragrance, are probably the two most important attributes of a bar of soap in signaling its quality and performance to the consumer. The lathering